2040 Traffic Analysis & Transportation Plan Overview

Agenda

- Brief review of existing conditions
- Future traffic conditions
- Summary of DRAFT transportation plan

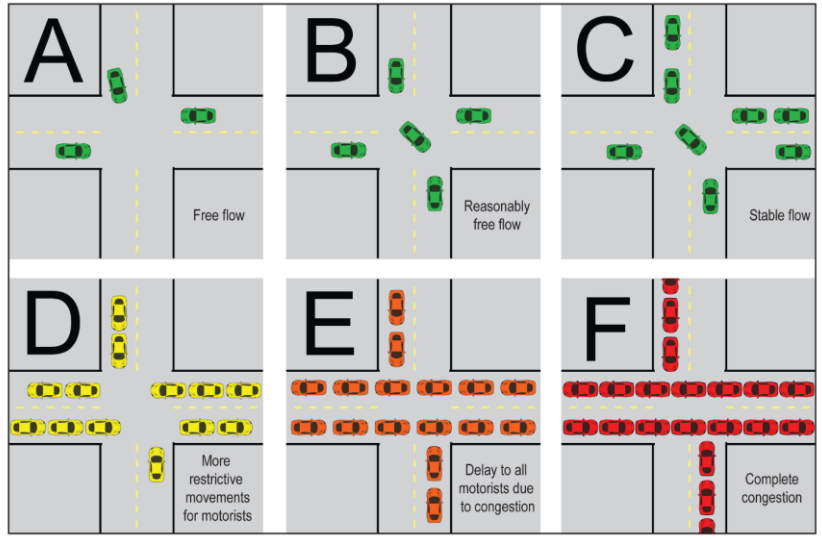
CALVERT COUNTY TRANSPORTATION PLAN

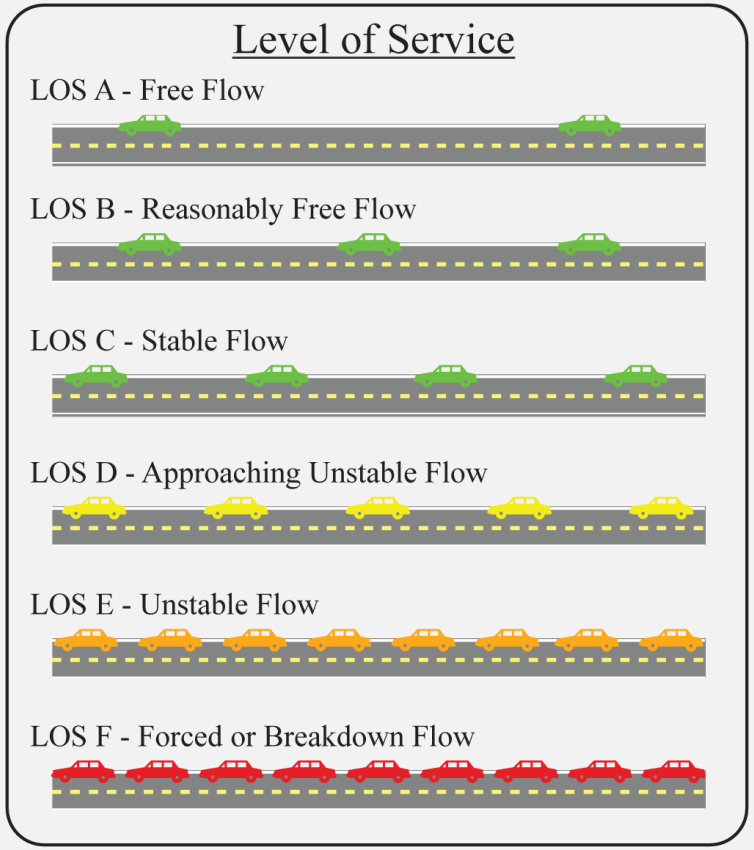
Please hold your questions until each section of presentation is complete.

Objective Standards

Commonly Used in Transportation Planning

Level of Service (Signalized Intersections)	Average Vehicle Delay at Intersection (seconds)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80





Why does this analysis matter?

- Uses objective criteria to quantify where improvements may be needed and what they achieve.
- Informs town center planning.
- Provides technical basis to satisfy legal tests for growth management tools such as impact fees and developer exactions.

Part I: Review of Previous Workshop

CALVERT COUNTY

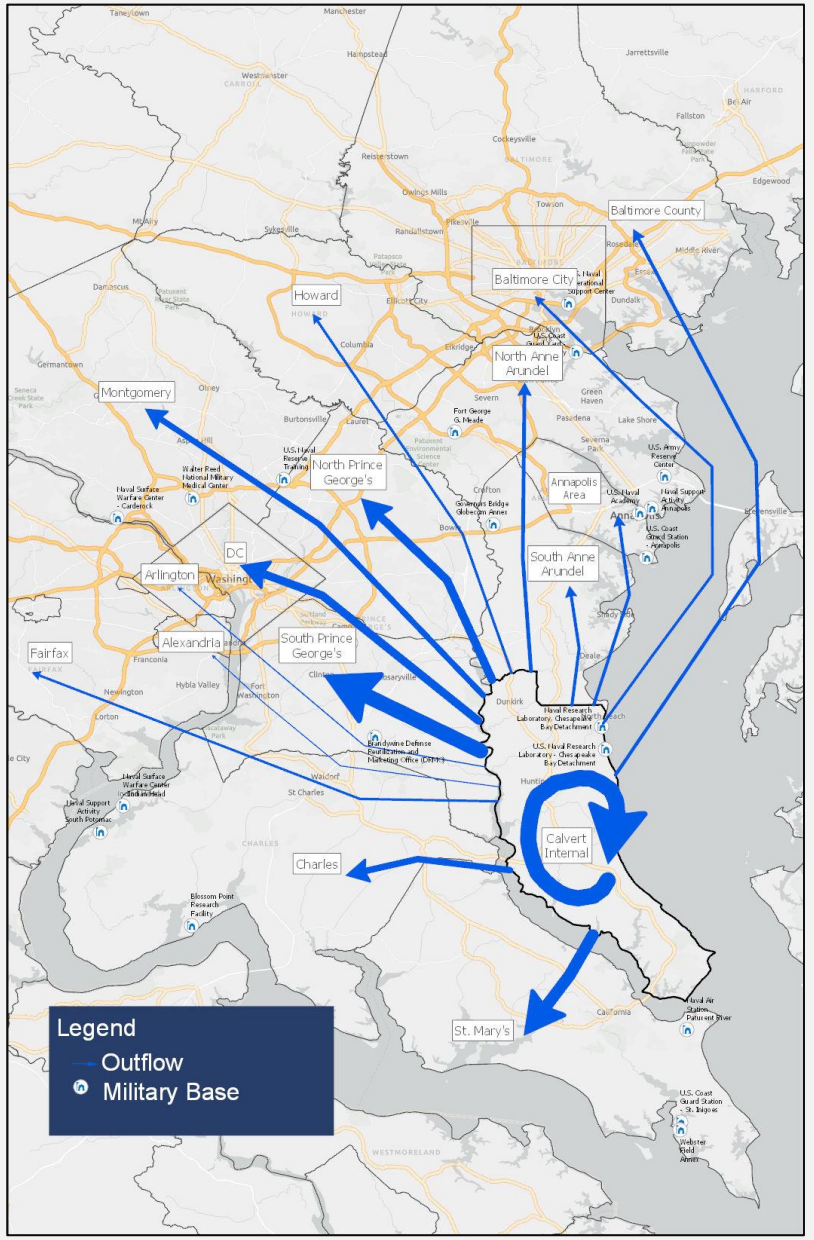
TRANSPORTATION PLAN

Outbound Commutes

12,083 Calvert County residents work in Calvert County.

22,697 residents commute to other counties.

Destinations	% of Trips
Calvert County	34.7%
Southern Prince George's	11.8%
St. Mary's County	9.3%
Northern Prince George's	6.4%
Washington, D.C.	6.2%
Charles County	4.9%
Montgomery County	4.5%
Baltimore City/ Baltimore County	4.4%
Northern Anne Arundel (BWI/Ft. Meade)	4.4%
Annapolis/Southern Anne Arundel	4.4%
All Other Locations	10.6%



Source: Census LEHD/LODES File 2016

Housing vs. Travel Time Trade-off

Calvert County (Prince Frederick)

Approx. 90 minutes to downtown D.C.

H+T Costs % Income: 44%

(Housing: 27% Transportation: 18%)

Howard County (Columbia)

Approx. 45 minutes to downtown D.C.

H+T Costs % Income: 58%

(Housing: 39% Transportation: 19%)

Washington, DC (Capitol Hill)

H+T Costs % Income: 33%

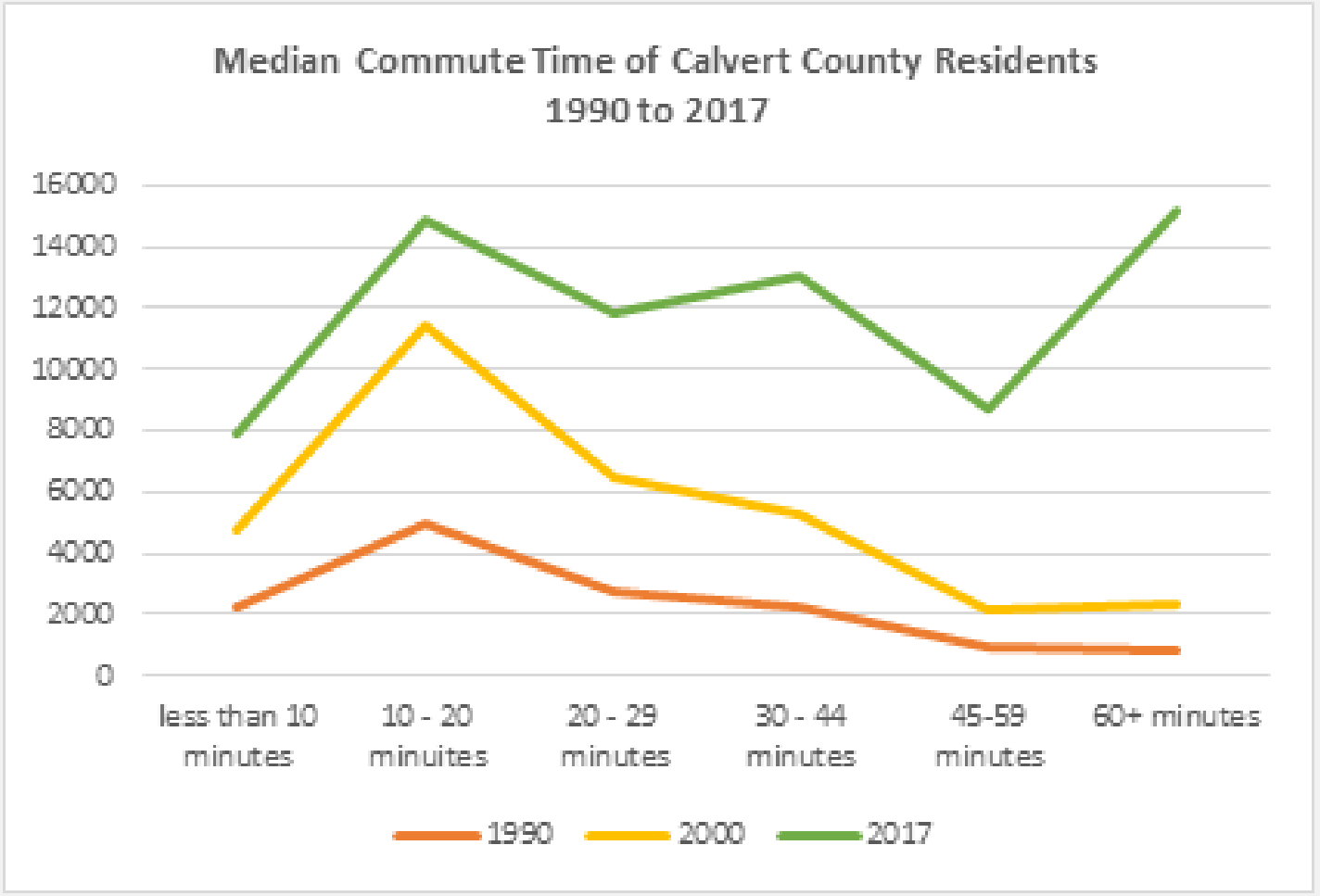
(Housing: 23% Transportation: 9%)

Frederick County (Braddock Heights)

Approx. 90 minutes to downtown D.C.

H+T Costs % Income: 40%

(Housing: 24% Transportation: 17%)



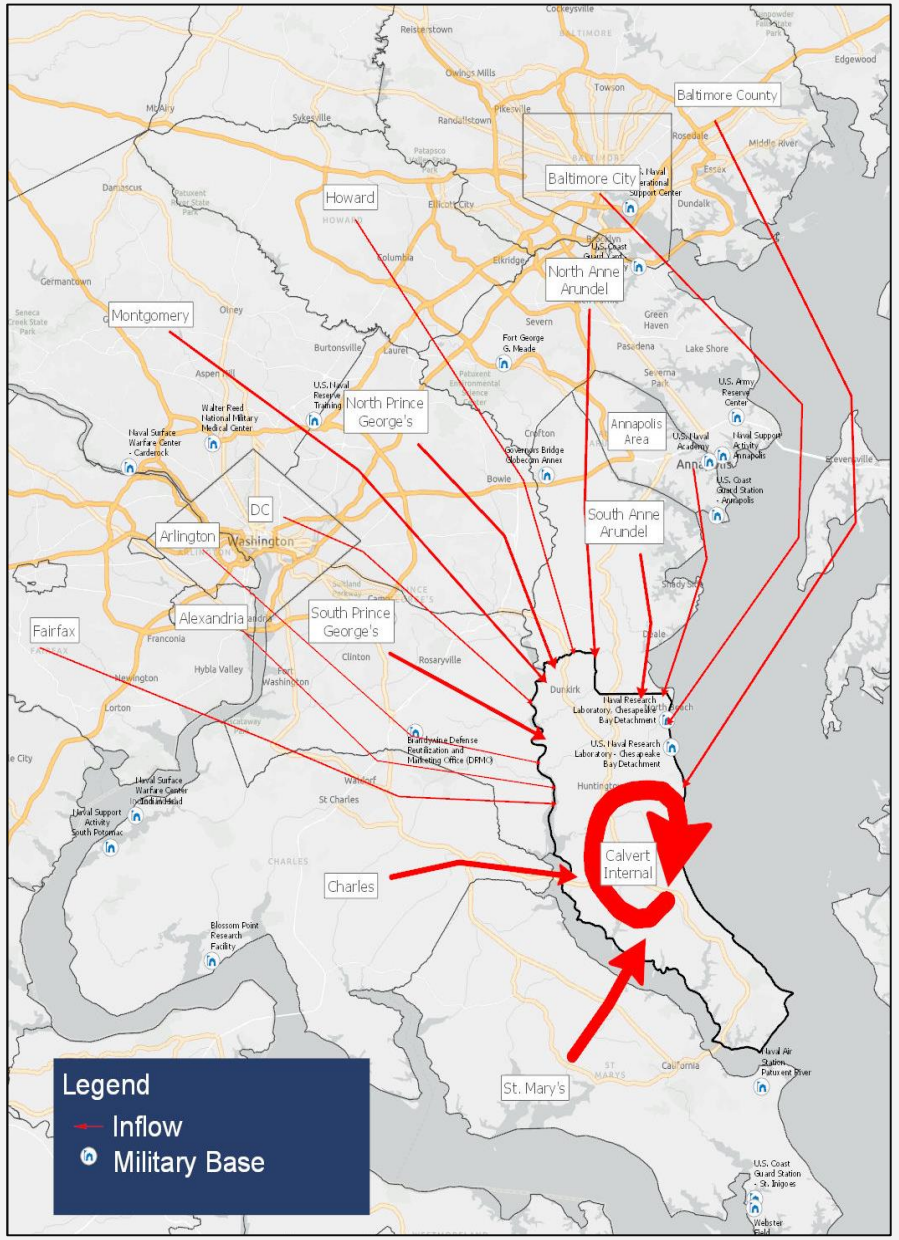
Residents of Calvert County have increasingly chosen a longer commute to work as a trade-off for more property, larger houses and lower taxes.

Inbound Commutes

12,083 Calvert County residents work in Calvert County.

9,153 people commute into Calvert County.

Destinations	% of Trips
St. Mary's County	28.3%
Charles County	12.3%
Annapolis/ Southern Anne Arundel	8.9%
Southern Prince George's	7.6%
Baltimore City/County	6.3%
Northern Prince George's	5.2%
Northern Anne Arundel (BWI/Ft. Meade)	4.7%
Montgomery County	4.2%
Northern Virginia	2.0%
Howard	1.7%
Washington, D.C.	1.3%



Source: Census LEHD/LODES File 2016

Through Traffic

Thomas Johnson Bridge

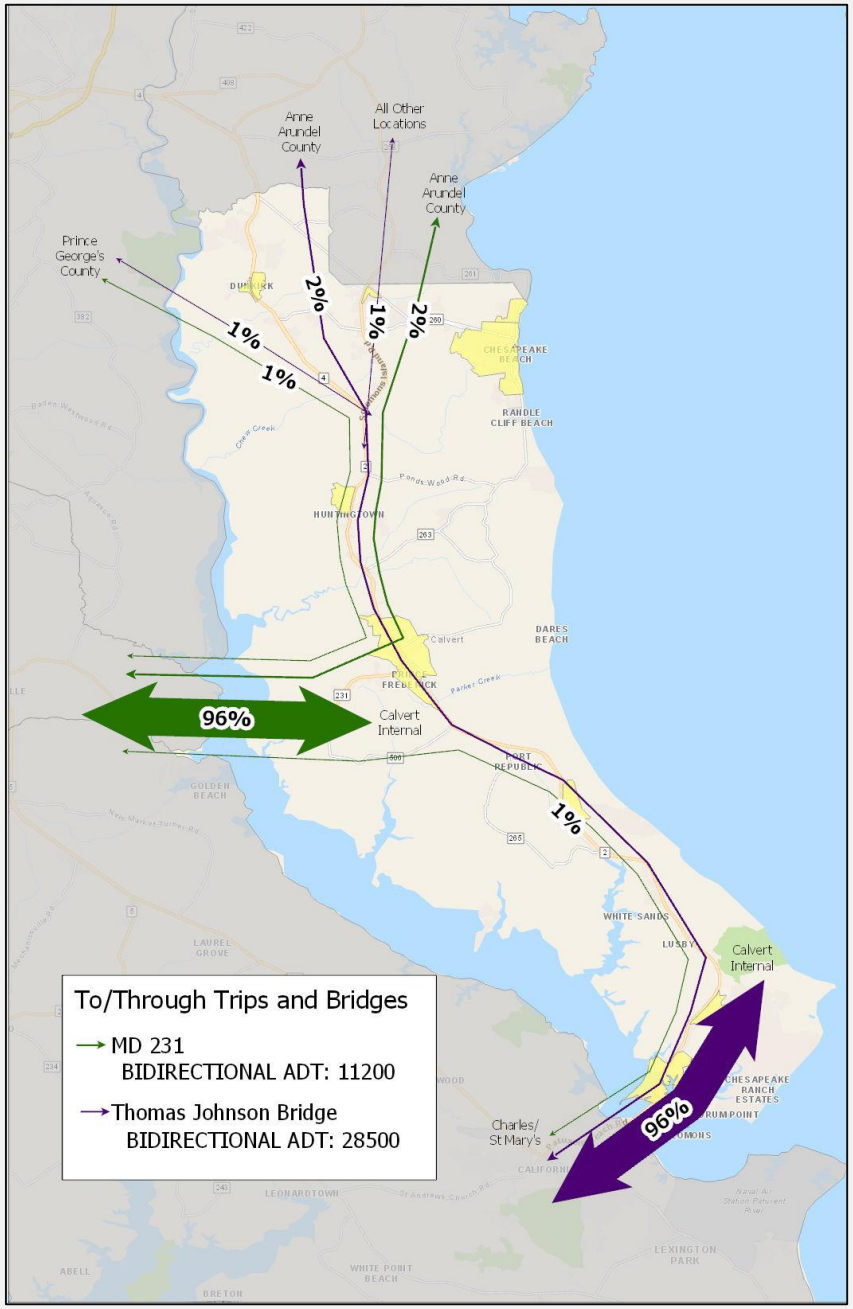
96% of all trips across Thomas Johnson bridge are to and from Calvert County.

4% to/from Anne Arundel, Prince George's, etc. (+/- 540 trips daily)

MD 231

96% of all trips across MD 231 bridge are to and from Calvert County.

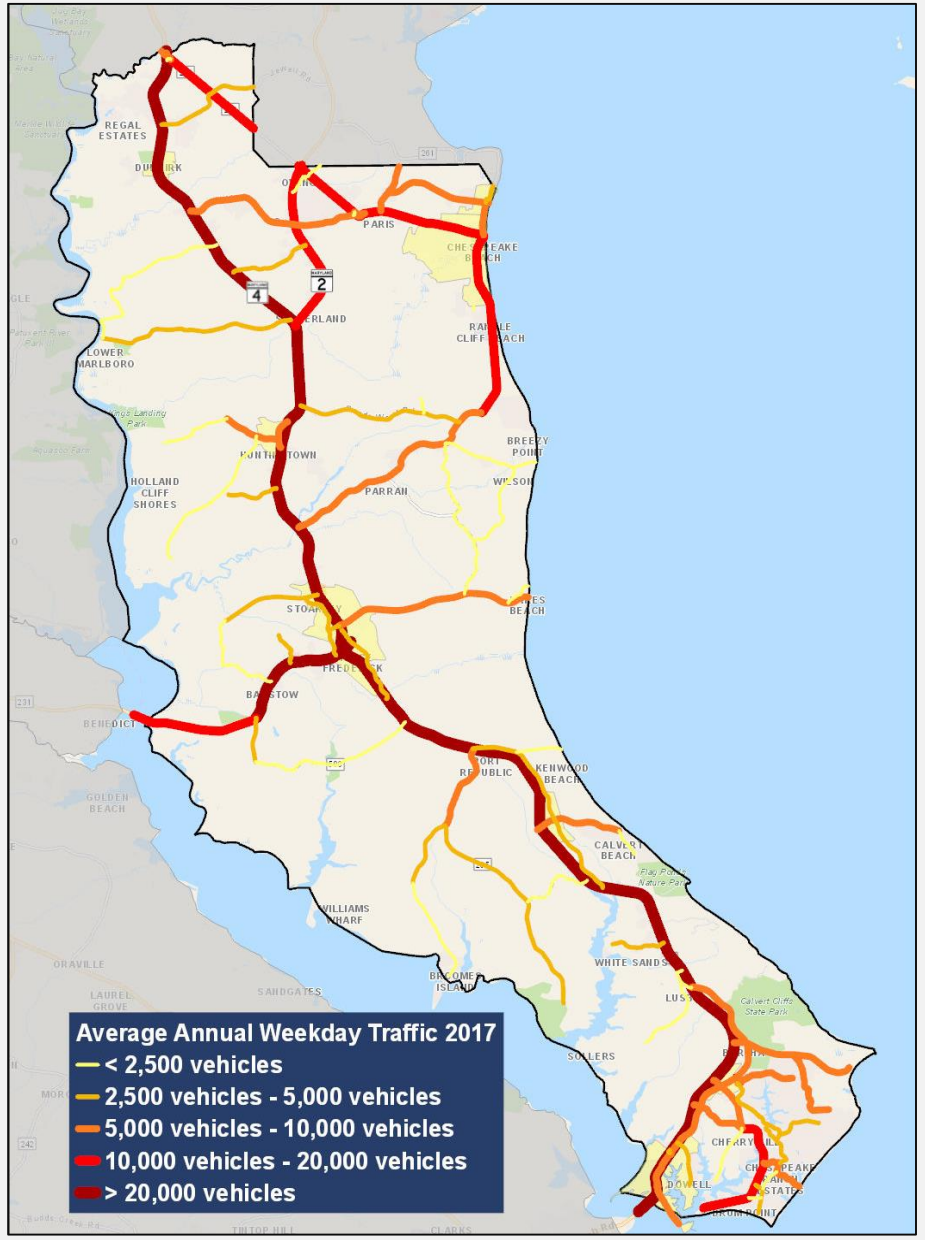
4% to/from Anne Arundel, St. Mary's, Prince George's, etc. (+/- 280 trips per day)



Source: 2017 Annual Traffic Analysis Streetlight: Data for Mobility (proprietary data set) 2018

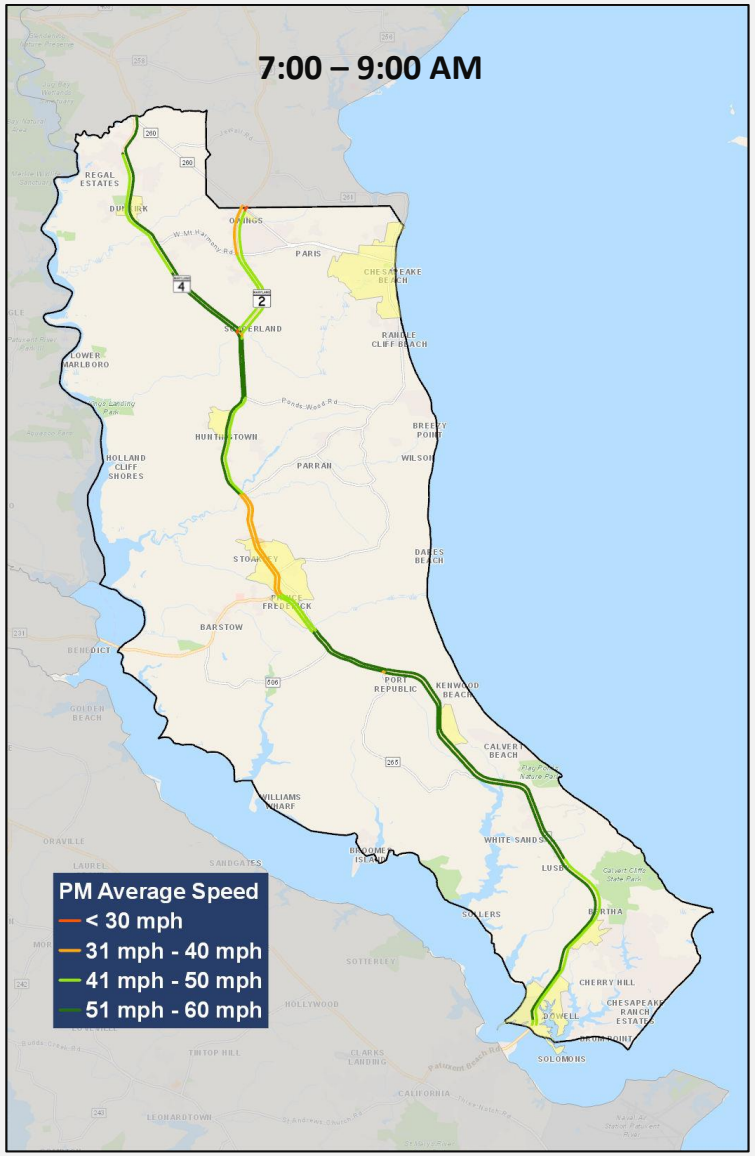
Average Daily Traffic

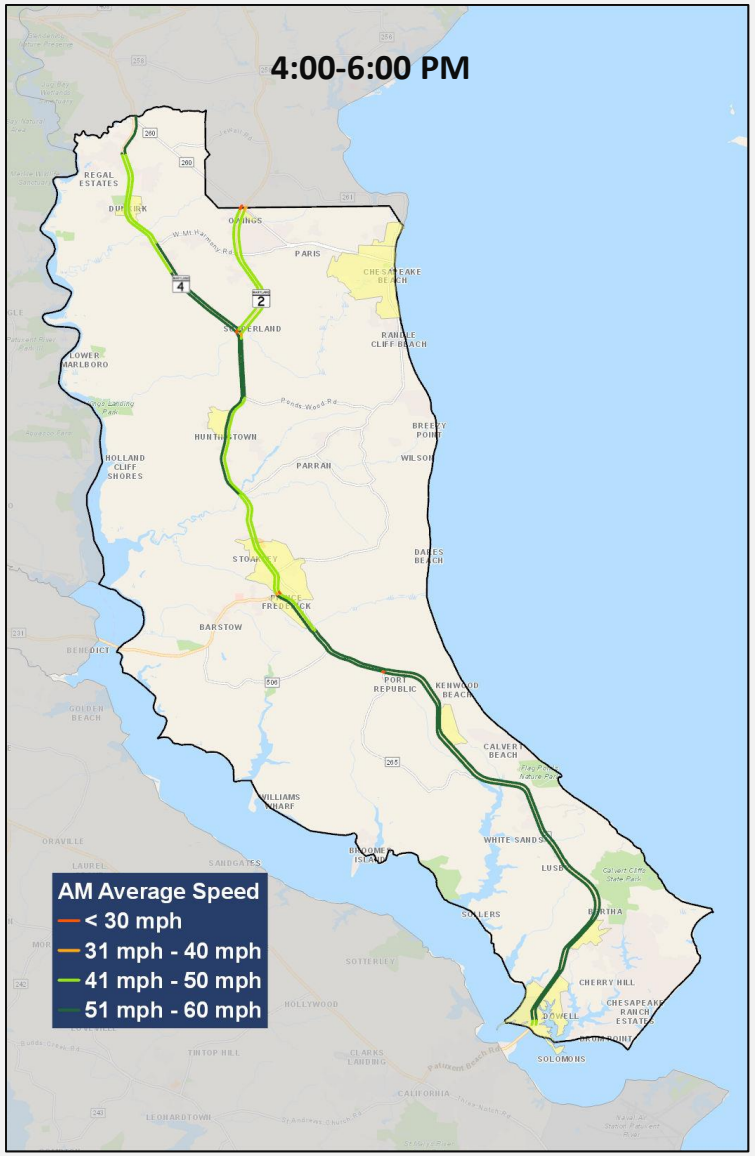
Segment	AADT
MD 4 (at county line)	32,020
MD 4 (north of split)	29,500
MD 2/4 (approaching split)	39,330
MD 2/4 (Hunting Creek to Plum Point)	37,270
MD 2/4 (Plum Point to Dares Beach)	41,891
MD 2/4 (Dares Beach to Hallowing Point)	41,350
MD 2/4 (Hallowing Point to Sixes)	38,250
MD 2/4 (Sixes to Broomes Island)	36,740
MD 2/4 (Broomes Island to Trueman Pkwy)	29,781
MD 2/4 (Trueman Pkwy to Cove Point)	26,830
MD 2/4 (Cove Point to Rousby Hall)	24,350
MD 2/4 (Rousby Hall to Bridge)	28,470



Source: MDOT SHA Calvert County Traffic Volume Map 2017

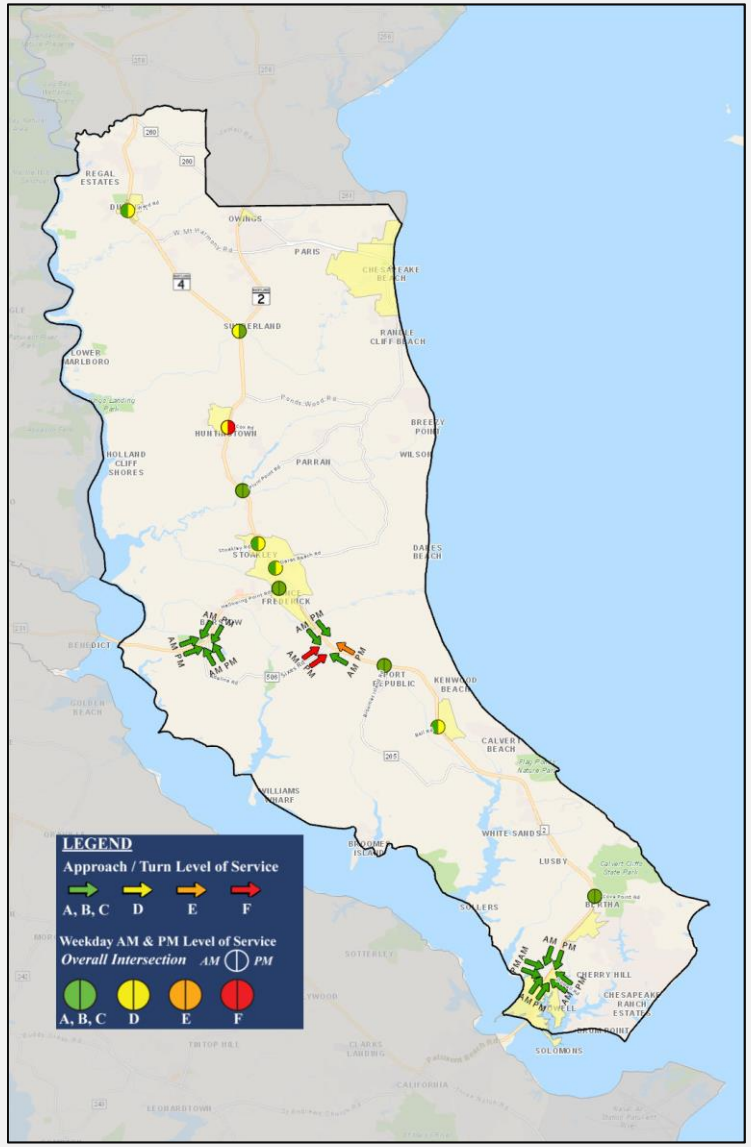
Average Travel Speeds – 2017





Source: INRIX October 2018 average speeds

Intersection Capacity/Delay - 2017



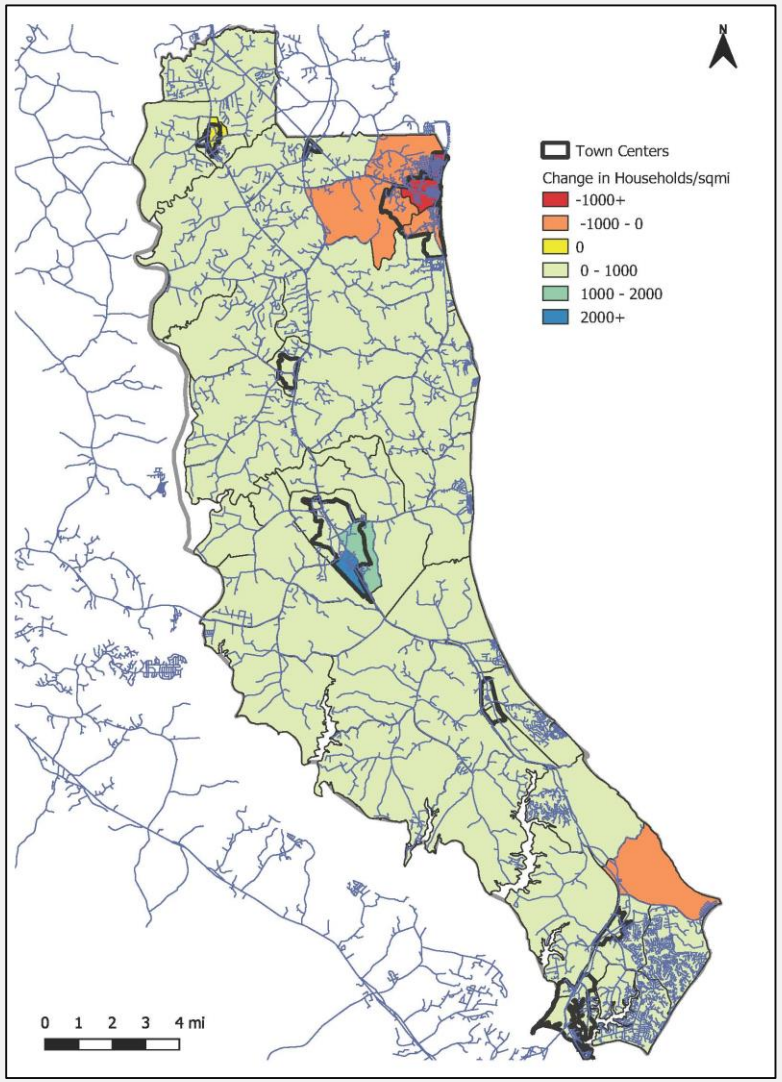
Intersection	Level of Service		Average Delay (sec)	
	AM	PM	AM	PM
MD 4 @ Ward Rd	C	D	26	48
MD 2/4 Split	D	C	39	28
MD 2/4 @ Cox Rd/MD 524	D	F	47	217
MD 2/4 @ Plum Point Rd/MD 263	C	B	25	17
MD2/4 @ Stoakley Rd	C	D	21	46
MD 2/4 @ Dares Beach Rd/MD 402	C	D	28	40
MD 2/4 @ Hallowing Point Rd/MD 231/Church St	C	C	26	33
Adelina Rd/MD 508 @ Hallowing Point Rd/MD 231	B	C	15	18
MD 2/4 @ Sixes Road/MD 506 (E/B Approach)	F	F	186	300+
MD 4 @ Broomes Island Rd/MD 264	B	B	12	12
MD 2/4 @ Calvert Beach Rd	C	D	24	39
MD 2/4 @ Cove Point Rd	B	C	13	25
MD 2/4 @ Dowell Road/Monticello Dr*	C	B	8	9

* Unsignalized intersection

Source: LOS derived from Turn Movement Counts; data collected and verified at various dates between Feb 2016 and Feb 2019

Comprehensive Plan Comparison

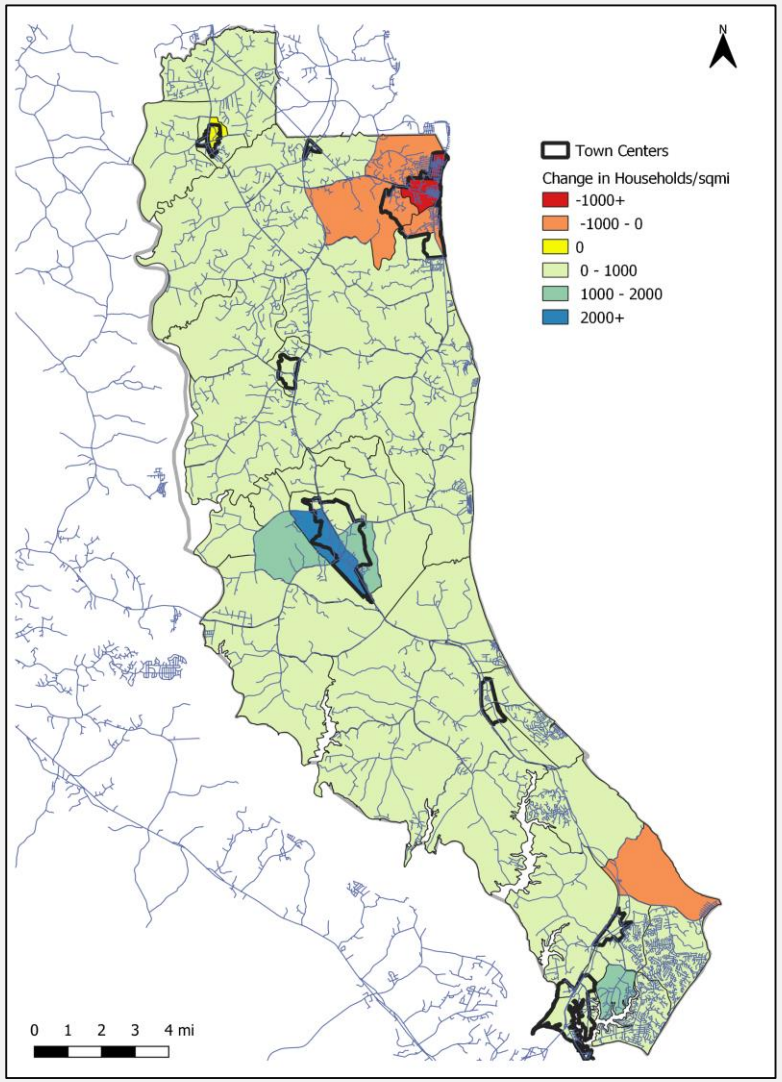
Households per Square Mile



Comp Plan
Adopted 2010

Comp Plan
Adopted August 2019*

*Map does not reflect change in town center boundaries; however, the data is reflective of adopted comp plan.



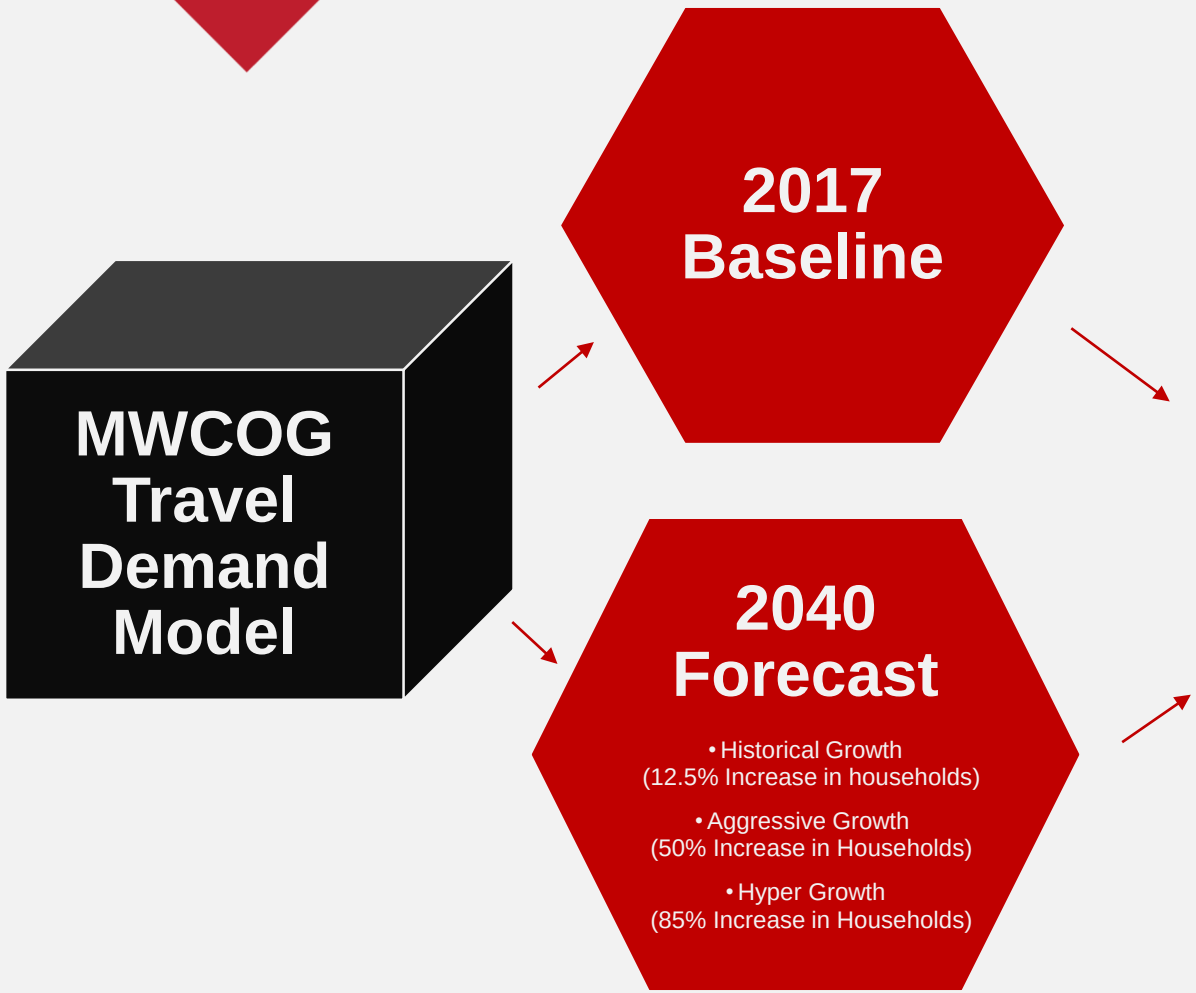
Part II: 2040 Traffic Analysis

CALVERT COUNTY

TRANSPORTATION PLAN

Travel Demand Model & Sensitivity Levels

2040 Horizon Year



		2019 Comprehensive Plan forecasted to 2040		
	2017	Historical Growth	Aggressive Growth	Hyper Growth
Households	33,064	35,198	50,642	61,478
Population	93,228	101,737	145,752	176,636
Employment	35,120	35,562	40,784	53,222

MWCOG = Metropolitan Washington Council of Governments
Historical Growth refers to period 2000 – 2019.

Summary of Countywide Road Network Performance

2017 vs. 2040 Growth Scenarios

	2017	2040		
		Historical Growth Rate	Aggressive Growth	Hyper Growth
Directional Route Miles	360	360	360	360
Lane Miles	442	449	449	449
VMT (On Network)	1,866,796	2,242,136	2,461,453	2,918,797

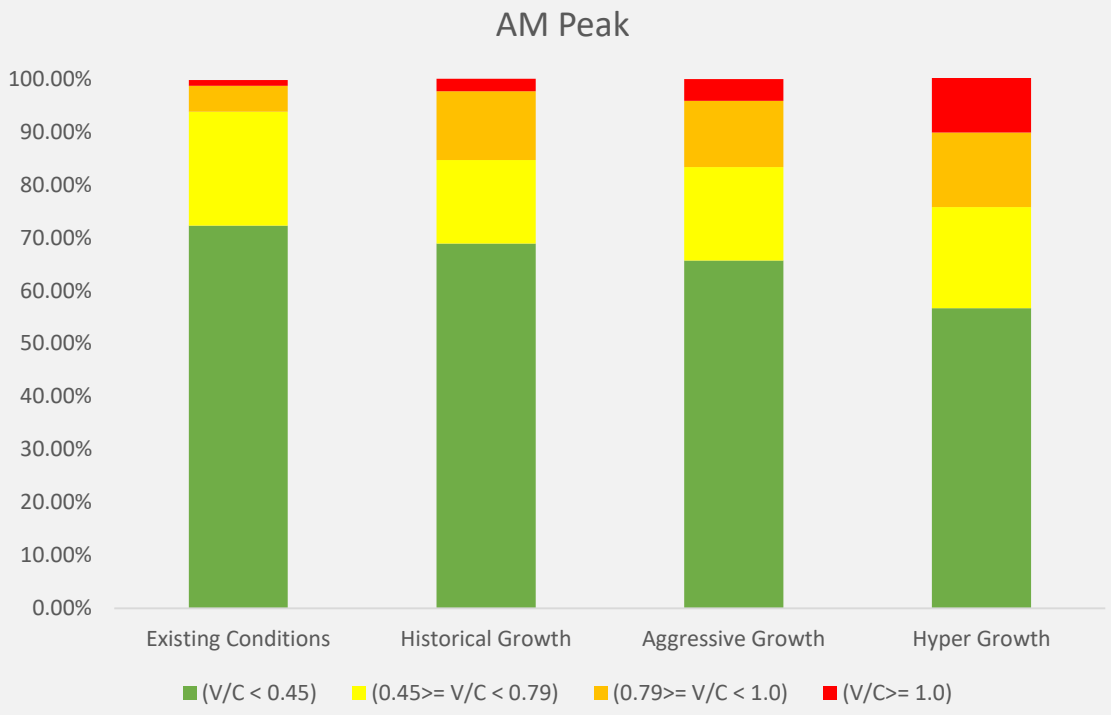
AM Peak Directional Route Miles by Congestion Level				
Low (V/C < 0.45)	72.3%	68.9%	65.7%	56.7%
Some (0.45>= V/C < 0.79)	21.5%	15.8%	17.7%	19.1%
Severe (0.79>= V/C < 1.0)	4.9%	13.0%	12.5%	14.1%
Failure (V/C>= 1.0)	1.1%	2.3%	4.1%	10.4%
Peak VMT*	356310	438876	471069	541645
Peak VHT*	9459	13667	16135	22197
Peak Speed (mph)	38	32	29	24

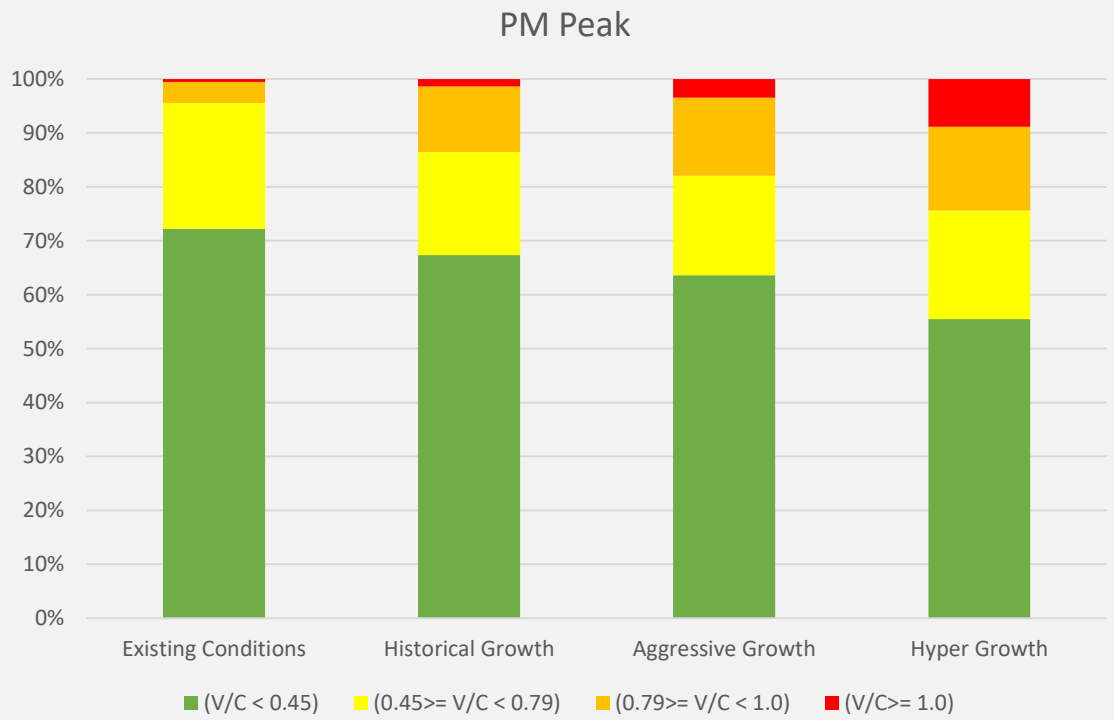
PM Peak Directional Route Miles by Congestion Level				
Low (V/C < 0.45)	72.2%	67.3%	63.6%	55.5%
Some (0.45>= V/C < 0.79)	23.3%	19.1%	18.4%	20.1%
Severe (0.79>= V/C < 1.0)	3.9%	12.2%	14.4%	15.6%
Failure (V/C>= 1.0)	0.6%	1.4%	3.5%	8.9%
Peak VMT*	513712	632378	685595	800598
Peak VHT*	13339	18143	21643	31207
Peak Speed (mph)	39	35	32	26

- **Increase in lane miles** reflects MWCOG assumption that the MD 2-4 widening through Prince Frederick will be operational and that the Thomas Johnson Bridge will increase from two to four lanes by 2040.
- **"On Network"** refers to roads classified as collectors and above.
- **VHT** refers to vehicle hours traveled
- **VMT** refers to vehicle miles traveled
- **V/C** refers to ratio of traffic volume (V) to road capacity (C)

Congested Mileage

2017 vs. 2040 Growth Scenarios





Congestion increases in some road segments under forecast based on growth rates from past 20 years, but very little increase in overall “failing” road segments.

*Model assumes that the MD 2-4 widening through Prince Frederick will be operational and that the Thomas Johnson Bridge will be widened by 2040.

Traffic Management Tools

	Cost	Time to Implement	Benefit
Grade Separated Interchange	Very High	7 – 10 years (min)	Reduce mainline delay, improve reliability and safety,
Roadway Widening	High	5 - 7 years	Reduce mainline delay
Access Management	Low	1 – 2 years	Reduce mainline delay and improve safety
Intersection Approach/Turn Lanes	Low	1 – 2 years	Reduce turning delay
Traffic Monitoring/ Signal Timing	Very Low	3 – 6 months	Improve reliability and reduce delay
Traveler Information Systems	Moderate	1 – 2 years	Alternate Routing
Commuter Transit	Low	6 months – 1 year	Choice

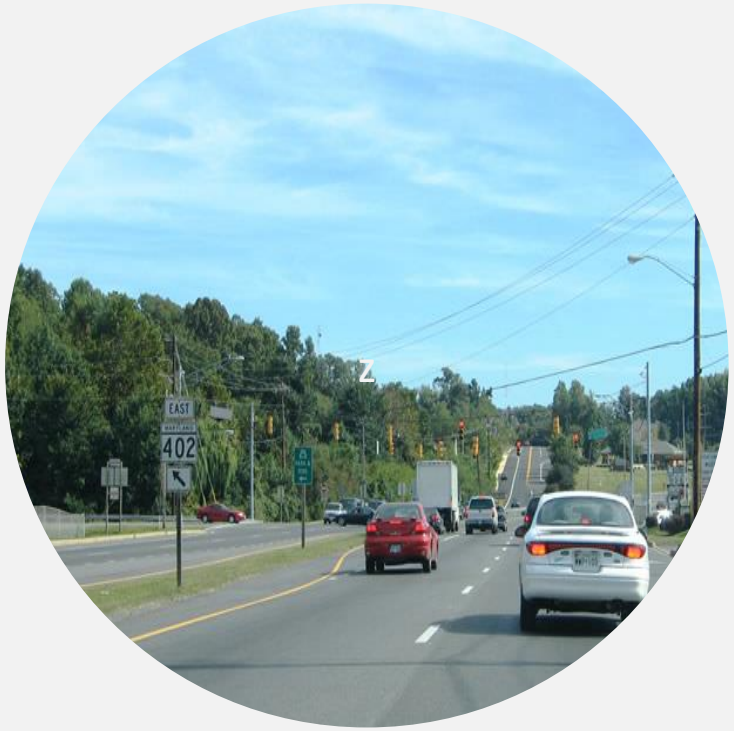
Intersection Level of Service

2017 vs. 2040 Growth Scenarios

Intersection	2017		Historical Growth with MWCOG Improvements*		Historical Growth with MWCOG + Additional Improvements	
	AM	PM	AM	PM	AM	PM
MD 4 @ Ward Rd	C	D	C	E	C	E
MD 2/4 Split	D	C	E	D	E	D
MD 2/4 @ Cox Rd/MD 524	D	F	F	F	D	F
MD 2/4 @ Plum Point Rd/MD 263	C	B	C	B	C	B
MD2/4 @ Stoakley Rd	C	D	D	F	C	E
MD 2/4 @ Dares Beach Rd/MD 402	C	D	E	F	C	E
MD 2/4 @ Hallowing Point Rd/MD 231/Church St	C	C	C	D	C	D
Adelina Rd/MD 508 @ Hallowing Point Rd/MD 231	B	C	C	D	C	D
MD 2/4 @ Sixes Road/MD 506 (E/B Approach)	F	F	A	C	A	C
MD 4 @ Broomes Island Rd/MD 264	B	B	B	B	B	B
MD 2/4 @ Calvert Beach Rd	C	D	C	D	C	D
MD 2/4 @ Cove Point Rd	B	C	B	D	B	D
MD 2/4 @ Dowell Road/Monticello Dr*	C	C	D	F	D	F

* MWCOG assumes that the MD 2-4 widening through Prince Frederick will be operational and that the Thomas Johnson Bridge will be widened by 2040.

Let’s Look Deeper



Traffic Takeaways

Historical growth scenario indicates little new failure/delay through 2040.

Few mitigation measures are needed at historical growth rate.

Likelihood of significant investment by MDOT SHA is low.

Part III: Countywide Transportation Plan Overview

Countywide Transportation Plan Overview

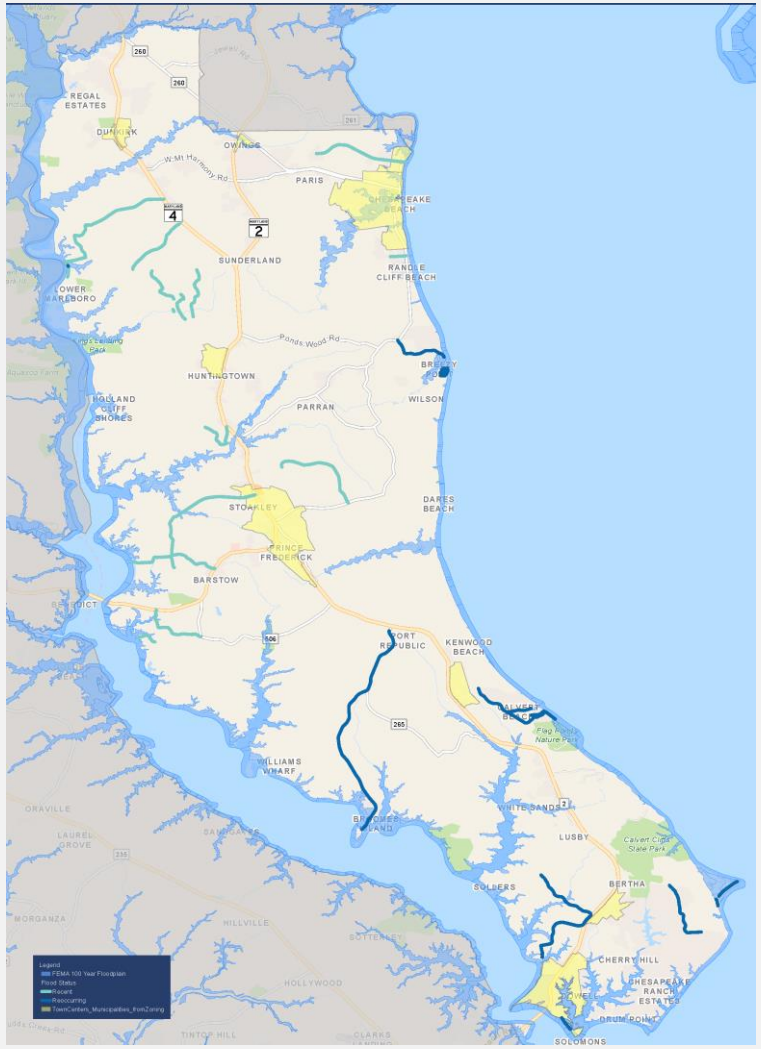
Planning Challenges:

- Geographic & Environmental Constraints
- An Aging Population
- Traffic Safety
- Limited Transportation Technology
- Climate Change & Infrastructure Resiliency
- Dispersed Travel Patterns & Lack of Trip Density
- Coordinating Land Use, Growth & Infrastructure Investment

Strategic Policies & Investments

Goal 1: Build and maintain transportation assets that are safe, resilient and in a state of good repair.

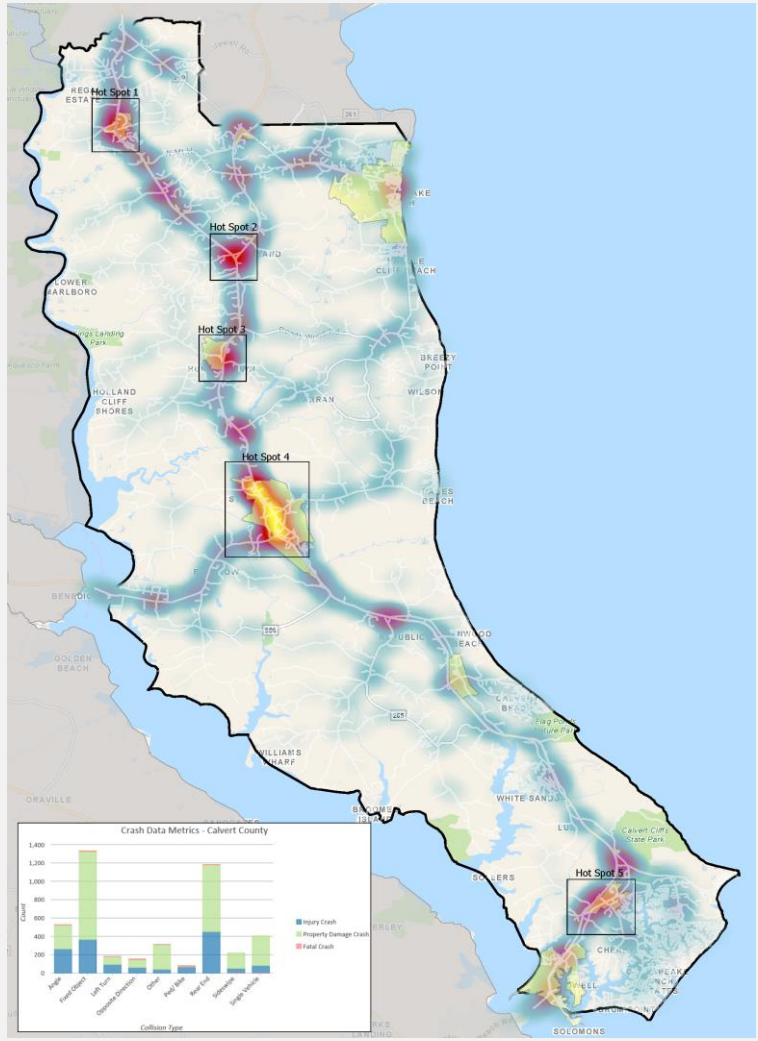
- Calvert County's roads, bridges and culverts will be maintained in a state of good repair as established by local standards.
- Improve drainage along roadways that have recurring flooding or may be susceptible to storm surge.



Strategic Policies & Investments

Goal 2: Eliminate traffic and pedestrians deaths and serious injuries.

- Improve data collection and dissemination to target enforcement activities to the highest causes and locations of traffic crashes.
- Maintain a continuous pipeline of traffic safety improvements



Strategic Policies & Investments

Goal 3: Improve mobility within town centers

- Reduce the need for local traffic to use MD 2-4 in Prince Frederick, Huntingtown and Dunkirk.
- Upgrade the bicycle and pedestrian network.
- Strengthen policy and financial tools to achieve targeted investments.
- Develop threshold for improvements during town center planning process.

Huntingtown

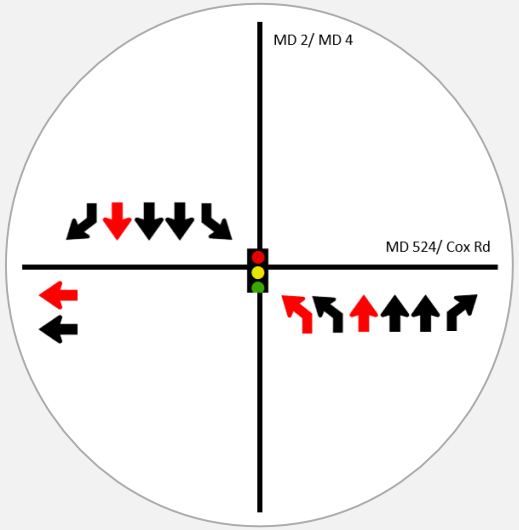
Prince Frederick

Dunkirk

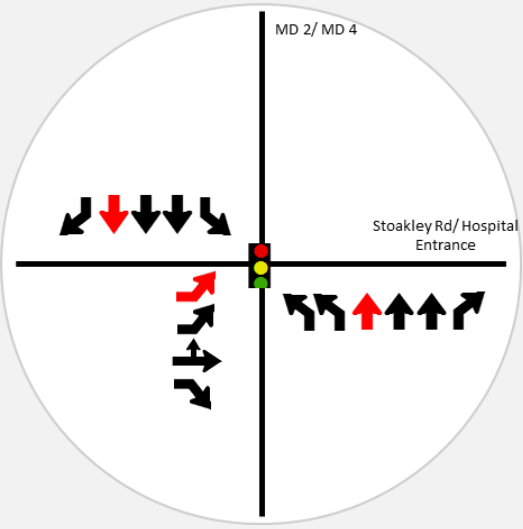
Strategic Policies & Investments

Goal 4: Expand practical choices and achieve reliable travel times for commuters using MD 2/4.

- Gather and disseminate timely intelligence on traffic conditions along MD 2-4.
- Deploy intelligent transportation technologies to improve travel time reliability on MD 2-4.
- Jointly develop and implement an access management plan for MD 2-4 with MDOT SHA.
- Improve congested intersections along MD 2-4



MD 2-4 at Cox Road



MD 2-4 at Stoakley Road

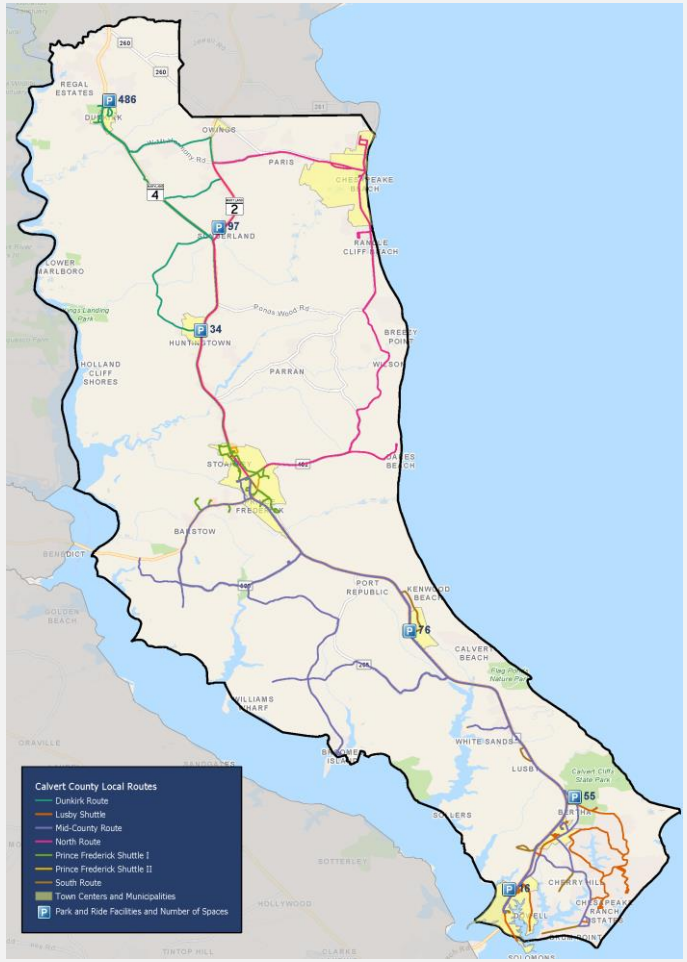
Existing traffic movement

New/Additional traffic movement

Strategic Policies & Investments

Goal 5: Meet unmet transportation needs for Calvert County's carless and limited-mobility households.

- Establish small-scale programs to provide transportation services to the elderly, disabled and low-income individuals seeking work
- Improve connections between areas with concentrations of low-income and auto-less households and commercial employment centers.



Conclusions

- Objectively, future traffic conditions are acceptable with modest improvements.
- More/widened roads are the most expensive solution to operational problems.
- Pace and timing of development relative to road improvements needs to be addressed with policy and financial tools during town center planning
- Mobility-impaired populations will increase significantly over next 10 years; transportation needs exceed current capacity.
- Resiliency of infrastructure will become a public safety concern in certain parts of the county.

Schedule

Transportation Master Plan released for comment	August 19
Public comments due to County staff	September 6
Review by Planning Commission	September – December 2019
Review & Adoption by County Commissioners	January – April 2019

Thank you!

- Visit www.calvertcountymd.gov/TransportationPlan.
- Sign up for Newsflashes and updates via the county's website
- Notify Me: www.calvertcountymd.gov/list.aspx and select Planning & Zoning.